North Mountain Lookout
Stanislaus National Forest
Groveland vicinity
Tuolumne County
California

HABS No. CA-2271

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Buildings Survey
National Park Service, Western Region
Department of the Interior
San Francisco, California 94102

HISTORIC AMERICAN BUILDINGS SURVEY

NORTH MOUNTAIN LOOKOUT

HABS No. CA-2271

Location: On top of North Mountain, Township 1 North, Range 19 East, section 33, Mount Diablo Base Meridian. 19 airmiles east, northeast of Groveland, Tuolumne County, California, Stanislaus National Forest.

Significance: North Mountain lookout exemplifies high, steel tower and live-in cab fire lookout construction on a remote and rugged wildland peak. It is a structure where design, function and setting intertwine to form an integrated whole. Though only 25 years old, North Mountain lookout is a member of an architectural genre which is fast-disappearing due to the ability to detect fires by satellite and other means. Aside from rarity, the spectacular setting, the integrity, the grouping of related structures and the absence of intrusive additions to the lookout site contribute to its significance.

Though North Mountain was the location of an earlier lookout, the extant lookout was constructed in 1963. It is one of only three remaining lookout structures in California with a K-brace tower of over 50 feet, combined with a live-in observation cab. Of these three lookouts, North Mountain is the only one for which its setting and integrity positively contribute to its significance. (Note: Neither of the other two lookouts having the same configuration as North Mountain, i.e., Mt. Elizabeth on the Stanislaus National Forest and Pickett Peak on the Shasta-Trinity National Forest, were found eligible for listing on the National Register of Historic Places in accord with the "Fixed Point Fire Detection in the USDA Forest Service, R-5 Programmatic Agreement", August 1987 draft.)

North Mountain lookout's physical setting is atop a 5754' peak that straddles the divide between the mainstem of the Tuolumne River and Cherry Creek. The viewshed of North Mountain includes the Hetch Hetchy Valley and high country in Yosemite National Park to the east, Pilot Peak to the south, Duckwall Mountain to the west and Lake Eleanor and Cherry Valleys to the north.

Description: North Mountain lookout is a 54'-tall, steel, K-Brace tower with a 13' x 13' live-in observation cab. The tower and cab were Forest Service standard designs; the tower was designated as "L-1600" series and the cab as "CL-30." It was erected by a local private contracting firm: Dale Moore of Twain Harte.

History: North Mountain lookout and garage were built in 1963 to replace an earlier 30'-tall "windmill" type wooden tower. The wooden tower had been built in 1940. The taller tower added at least another 10 percent to the area viewed, made the remote facility more fire-resistant and greatly improved ita strength and durability.

North Mountain, the location, had its name by at least 1908 and a trail system that reached the mountain-top was in place by at least 1927. North Mountain may have been used for fire detection during the course of building the Hetch Hetchy project for the water and hydroelectric supply for the City and County of San Francisco.

The old lookout was replaced with the new during a flourescence of administrative facility construction on the Stanislaus between 1961 and 1965. Construction during that period was exceeded on the Stanislaus only by the level of construction activity during the Civilian Conservation Corps era. The $45,795 cost to build North Mountain was shared between the Forest Service and the National Park Service. North Mountain was the second steel tower constructed on the Stanislaus with the tower on Pilot Peak being the first (in 1962). The new tower did not have the garage and workspace that comprised the lower stories of the 1940 wooden lookout. To replace this lost functional space, a 24 1/2' x 20' 4" cement foundation, wood-framed and wood-clad garage was built in 1963. Additionally, the old pit toilet was replaced with a new one on the North Mountain site.

The lookout person employed at North Mountain during the transition from the old to the new was Herschel Nieman. Herschel's wife, Joan Nieman, assumed lookout duties on Herschel's days off. When the new facility was built, the Niemans had a 2-year-old daughter for whom North Mountain was also her summer home. According to a newspaper article about the new facility, this accounts for the specially constructed chain-link fence around the cab's catwalk.

North Mountain was in continuous fire season service until 1971. During the last four years of its use, Juanita Larson waa the lookout person. In her estimation, the view from North Mountain lookout, of Kolana Rock, Matterhorn Peak, Mount Conness, Mount Hoffmann, Castle Rock, Cherry and Eleanor Lakes, the Clark Range, Burst Rock, Haystack Peak, Iron Mountain, Tiltill Mountain, the Cathedral Range, Pilot Ridge, and Duckwall, is unequaled. Seventeen years later, she remains so awed with the view that, when she dies, she plans to have her ashes scattered on North Mountain.

There have been no modifications to North Mountain lookout, except for the addition of a set of solar panels on the cab's roof in the Fall of 1987. These panels are the power source for part of the Forest's radio repeater system. The heater, refrigerator, and 4-burner stove and oven and the Osborne firefinder were removed from the cab when it was taken out of service. The cabinets, firefinder table, sink, water hand-pump and furnishings are as they were when the tower was in-service.

Sources:

Modesto Bee. "New Lookout Tower Points Up Strides in Forest Fire Detection and Control." October 13, 1963.

Cermak, Robert W. "Fire in the Forest." Unpublished MA Thesis manuscript, California State University, Chico. February 1988.

Thornton, Mark V. "Fire Lookouts of California Historic Significance Evaluation." Unpublished manuscript written for the USDA, USFS, Region 5. March 1987.

Various. "Fixed-Point Fire Detection in the USDA Forest Service, Region 5." Draft unpublished manuscript. August 1987.

Various. Region 5 Architectural Drawing Archive. USFS, Regional Office. San Francisco.

Larson, Juanita. Interviewed via telephone by Pamela A. Conners, Stanislaus National Forest Historian. April 6, 1988.

Moore, Dale. Interviewed via telephone by Pamela A. Conners, Stanislaus National Forest Historian. March 31, 1988.

Anon. Facilities condition reports on Lookout No. 4128 and Garage No. 1515. On file at Stanislaus National Forest, Supervisor's Office, Sonora, CA.

Anon. "Stanislaus Fire Protection Plan District 2." On file in Stanislaus National Forest History File, 5100/5110 Prevention, StF, S.O..

Historian: Pamela A. Conners
Stanislaus National Forest
June 6, 1988
Stanislaus Fire Recovery

EXCERPTS FROM

"FIXED-POINT FIRE DETECTION
IN THE USDA FOREST SERVICE, REGION 5"

DRAFT, AUGUST 1987

(pages 18-32)

HISTORICAL NARRATIVE OF FIRE DETECTION IN CALIFORNIA

In its broadest sense fire detection refers to any effort to spot fires before they cause unwanted damage to life or property. Fire detection focuses on two major areas: protection of property and improvements, and protection of natural resources. The protection of property and people against destructive fires has been practiced for hundreds of years, if not since the beginning of civilization (Thornton 1986: 9). Since then, various people have exploited the possibilities of fire and biological adaptations to it for their own purpose (Pyne 1983: 171).

In its early form detection might have been as casual as staying alert while tending the fields, or as formal as posting sentries on city or fort walls. In practice, though, individuals were rarely enlisted solely to lookout for fires. During the Middle Ages, European peasants fought wildfires with brooms, robes, fire lines, and backfires. The chief goal was to prevent loss of life and property, but the threat of fire was usually an internal problem, rather than the result of a wildland fire. Fires were rarely controlled unless they threatened farms, fields, or villages, and if large, such fires quickly exceeded any efforts at control.

The detection and control of fires in remote wildlands posed an entirely different problem. Detection and control of these kinds of fires only developed after people: 1) overcame the perception that wildfire was unavoidable and uncontrollable, 2) took responsibility for fires regardless of location, 3) came to view wildland fires as desirable to regulate regardless of cause, and 4) had the means to control such fires.

In the United States, even though early pioneers adapted Indian burning practices, a combination of logging, land-clearing, and frontier attitudes about fire was in part responsible for holocaust fires, such as the Miramiche of 1825 and the great Idaho fire of 1910 (Pyne 1983: 171).

Nevertheless, it was in the United States, that the detection and control of wildfires began in earnest. Fire management found its beginnings in the creation of the National Park System and expanded during the 1880's through efforts at the Adirondack Forest Preserve in New York.

In California the need for fire detection increased after the discovery of gold in 1848, and continued to increased as people settled throughout the state. During the latter half of the nineteenth century, the attitude among most settlers was that wildland fire protection was unnecessary, impossible to undertake, and counterproductive. Although, a few volunteer fire brigades were organized to protect towns and property.

Railroad owners were among the first advocates of wildland fire control because wildland fires damaged trackage. This concern increased after the construction of the transcontinental railroad in the late 1860's. Many railroad companies

had their own cars designed to carry water hoses and pumps to extinguish fires before they damaged the line. Yet, both in California and throughout the nation, carelessness continued to lead to devastating fires causing monumental damage and sometimes tragic loss of life.

Conservationist groups were also concerned with combating destructive fires. They lobbied state and federal governments for aid in protecting watersheds and wildlife from fire. Concentrating on issues of flood damage and soil erosion, they helped convince state and local governments to establish fire protection associations, and the federal government to develop plans for fire control. Private timber owners were first to favor fire protection associations.

Federal involvement in fire control began with the Park Service and was later introduced into the Forest Reserves. In 1891 Congress created the Reserves and authorized the President to withdraw from entry forest lands deemed to be of national importance. In 1885 California created a Board of Forestry to deal with timber abuses, but the board was abandoned eight years later for lack of support. The need for fire detection and prevention increased as more land was set aside by the Federal Government and as destructive fires increased, particularly in the drought-prone, sprawling suburban areas of southern California.

With the creation of the Reserves, millions of acres of forested land were set aside from the public domain, yet at the time, management of these lands was unclear. New issues, priorities, and legislation brought about changes in fire policy, which were put into practice on the Forests. Among a ranger's primary duties were to prevent and control fires, and to prevent trespass. Because forest boundaries were unclear trespass occurred frequently and prosecution was difficult. The detection of fires generally consisted of an individual reporting smoke to a ranger station or fire guard.

During the early 1900's the General Land Office carried out extensive surveys to properly monument forest boundaries. Mapping was done on each Forest, and it was probably during this time that specific mountain tops were considered for detection spots (Thornton 1986: 14).

In 1905 the Forest Reserves were shifted from the Department of Interior to the Department of Agriculture and two years later they were renamed National Forests. The change, although actuated on paper, only modestly affected the duties of the early-day forest personnel. Forests were still understaffed, poorly managed, and meagerly funded.

The greatest single motivator within the Forest Service was its Chief, Gifford Pinchot. Part of Pinchot's plan was to convince the public that the Forest Service mission included fire detection and prevention. Pinchot and many of his followers believed that wildland fires had to be prevented. Pinchot's vision would shape the future Forest Service, but a lack of funding restricted the development of fire management policy until the second and third decade of the twentieth century.

Fire detection and control are aspects of the larger question of fire practices, the ways in which natural- and human-caused fires are used or withheld. A prescribed burn to one culture may be wildfire to another. In 1909 the Forest Service began experiments on light burning as a means to prevent wildfires. These experiments were controversial and, within the Forest Service, the issue of light burning created a rift between advocates of the practice and those who opposed it. A state commission helped resolve the issue in the 1920's, declaring the practice to be counterproductive to current fire policy.

In 1910 Chief Forester Henry S. Graves declared fire control to be 90 percent of forestry (Pyne 1983: 173). Yet, counter to traditional frontier and agricultural fire practices, which relied on light burning, the U.S.D.A. Forest Service embarked on a program of systematic fire protection.

During the 1910's and 1920's, fire research concentrated on investigating fire as an economic question and as a technical problem. Dissatisfaction with the lack of a fire control organization, and public pressure resulting from several seasons of holocaust fires in the West, impelled California District Forester, Coert DuBois, to develop a fire plan using the Stanislaus National Forest as a model. In 1911 the plan was circulated throughout California's National Forests. Of primary importance to the plan was the designation of key mountain tops as permanent lookout points (Thornton 1986: 14). The "primary" lookout was introduced, along with standard fire statistics. For detection, earlier experiments had relied on a system of patrols, which used portable phones and, later, radios for communication.

In 1914 DuBois presented a more extensive and refined treatise on the general subject of fire control. Entitled "Systematic Fire Protection in the California Forests", this manual laid the groundwork for fire control in California (Thornton 1986: 15). In a section devoted to fire protection, DuBois presented a standardized plan for a 12' x 12' wood, live-in cab. He also endorsed the Aermotor Company's design of steel observation towers. In 1917 DuBois presented Plan Number 4-A, which called for a 14' x 14' primary lookout building. This plan, which became the standard for lookout cabs in Region 5, replaced the 12' x 12' cab. By the late 1920's, the majority of lookouts were designed with 14' x 14' cabs placed on the ground, or with towers of varying heights. DuBois' expansion of the cab provided more space for lookouts personnel who had suffered through previous fire seasons in cramped quarters.

In 1911 Congress passed the Weeks Law which authorized funds for the protection of the watersheds of navigable streams. The Act also provided money for research into fire-damaged watersheds, including fire control research. The Clarke-McNary Act of 1924 supplemented the Weeks Law and expanded federal assistance to state forestry programs. In 1927 with the creation of a Department of Natural Resources with a Division of Forestry, State-run wildland fire protection was initiated, and lookout construction began on state-owned or leased land.

The teens and early twenties not only saw the growth of forestry divisions within state and federal governments, but also research of fire prevention methods, including the controversial light burning. Mapping of the state's vegetation zones, compiling of fire statistics, and use of aerial photography expanded during the 1920's. In 1921 federal and state fire officials met at Mather Air Force base in Sacramento to discuss fire policy. During the late 1920's, the Shasta Experimental Fire Forest was established as an administrative model of systematic fire control.

District Forester Stuart B. Show was a staunch proponent of a statewide detection system. Around 1930 Show formed a task force to investigate all aspects of fire detection. The group was headed by Edward I. Kotok, Director of the California Forest and Range Experiment Station. The task force continued to meet during the early 1930's, and in early 1933, with the assistance of Civilian Conservation Corps (CCC) laborers, began construction of a new series of fire lookouts and replacement of many outdated ones.

During the late 1920's and into the 1930's, the Region continued visibility mapping of the areas seen from existing and proposed lookout stations. These maps were compared with fire occurrence zone maps to determine the effectiveness of a particular lookout point. From the study it was determined that the outside limit for the detection of smoke was 15 miles. Within this radius, fires must be discovered within 15 minutes of their start, to guarantee a reasonable chance of confining them to a small area (Thornton 1986: 116).

After the mapping was completed, detection planning conferences were held on each Forest, the first in 1933. The visibility studies and detection conferences resulted in a list of lookout points rated by their coverage area, and plans for the construction of lookouts at the points with the highest rating. Many peaks already had towers, but the tower designs of the older lookouts were considered obsolete.

By 1934 new fire lookout construction was in full swing. That year Assistant Regional Forester, J. H. Price reported that, "...any tower over 30' in height comes furnished with an observatory. Where such a tower is used, a building must be furnished for living quarters. If there is any visibility from the ground, a type "C" building can be used for the living quarters. There are few places where higher towers are needed and where we would be justified in also having a standard lookout house." (personal communication by J. H. Price to Forest Supervisor, Eldorado, S. F., CA, Feb. 26, 1934). Between 1933 and 1938, over 200 new Forest Service lookouts were built in California. Well over half of those lookouts used 30' towers or less with standard 14' x 14' cabs. On some Forests, the new towers almost entirely replaced older lookouts. Therefore, over two-thirds of all the towers existing in Region 5 today were built between these years.

The 1930's tested the financial and physical strength of the units towards which systematic fire control could be pushed. With the help of emergency work programs and the new technology of pre-fabricated construction, lookouts could be erected in a matter of days. Using CCC crews and local experienced men as

laborers with Forest officers to oversee the work, the Forest Service embarked on an ambitious program of lookout construction. The designs for the towers and cabs were standard, but local situations sometimes dictated the use of varying materials or alteration of designs. Thus, towers of the same height might be constructed of wood or steel, or be battered or non-battered. In general, the view area dictated the height of the tower.

The CCC and other emergency relief programs of the 1930's not only benefited the Forest Service, but also boosted other fire detection programs in the State. The California Division of Forestry actively began hiring seasonal employees to operate the new lookouts, which numbered over 51 by the end of the 1930's.

As the threat of another world war loomed larger, the military application of California's lookouts became more apparent. The passage of the National Defense Act in 1920 provided the basis for reorganizing the Army command system. An offshoot of this was the creation of the General Headquarters (GHQ) Air Force in 1935. The GHQ is credited with establishing the Aircraft Warning Service (AWS). Beginning in 1937 California's lookout operators were trained and tested to spot aircraft. Also referred to as the Aircraft Warning System, this pilot program spread along the entire West Coast, and by 1941 included portions of the entire nation.

After the attack on Pearl Harbor on December 7, 1941, the AWS was fully activated and observers were rushed to their respective stations. Plans called for the winterizing of all lookouts and the erection of numerous temporary cabins. The AWS called for spotters every twelve miles or less. Two observers were required at each lookout point for twenty-four hour coverage. Telephone lines were kept in good repair, and, during the winter months, supplies had to be flown in or carried in on skis or a snow cat. A 1944 circular remarked that, "...the efficiency of a forest-fire lookout man depends mainly on four qualifications: 1) experience, 2) knowledge of the territory, 3) alertness, and 4) the quality of his eyesight".

The AWS continued for the duration of the War, but towards the end many AWS stations had closed. In 1951 the Governors of California, Oregon, and Washington called for the re-establishment of a "Ground Observer Corps", apparently over concern about the emerging Korean conflict. This program, not nearly on the scale of the 1940's, ended about 1957.

The 1940's ushered in a new, more expanded system of fire detection and control. During the War, fire control agencies experimented with aerial detection. Experiments were carried out on the Chelan National Forest in Washington during 1945. Using airplanes as the principal means to detect fires, pilots demonstrated that airplanes were an economical and effective means of spotting wildfires. Yet, fire officials continued to rely on the proven, well-tested detection from fixed point lookouts.

During the war, new lookout construction nearly came to a halt, but in 1945 the Forest Service designed an "experimental lookout" for La Cumbre Peak on the Los

Padres National Forest. The lookout was innovative, with its steel frame cab, columns, roof beams, ties, and girders. The project was funded by the the Forest Service Washington Office and Region 5. Compared to other lookouts, La Cumbre was somewhat expensive, costing over $6,500. With lean budgets after the War, and the loss of the CCC, funding for similar projects was rare.

For most Americans the 1950's was an era of prosperity, characterized by increased building and advancements in technology. Throughout California suburbs sprawled outward covering acres of previously unoccupied land, bordering many of the National Forests. To deal with the increasing threat to property from wildfire, the California Department of Forestry (CDF), in cooperation with the Forest Service, advanced fire control by establishing an integrated fire management organization. In response to new technology and building design, CDF began a concerted effort to replace or modify many of their older towers. A similar program was begun within the Forest Service, but not on the as large a scale as CDF.

During the 1950's the Forest Service was not only faced with an increased danger to property and lives, but also with the usefulness of its fire lookouts. In southern California the smog problem coincided with the height of the fire season, resulting in poor visibility for lookout operators. As a result a number of lookouts were eliminated from the system. Yet, Forest Service studies on the efficient use of lookouts continued. In the 1950's the Forest Service introduced yet another new design, the 13' x 13', all-metal, live-in cab with a flat roof (Thornton 1986: 19; 118).

Earlier experiments using aircraft to observe and extinguish fires were continued during the 1950's. Between 1955 and 1960, Region 5 undertook the Increased Manning Experiment. Despite a significant decrease in suppression costs and burned acreage, the study at first failed to convince fire control officials that lookouts were not needed. But, eventually, many lookouts were deactivated, and destroyed or removed. The primary reasons for this have been: 1) an increase in the number of fires reported by forest users, 2) the effectiveness of air patrols in detecting fires, 3) more and better roads, 4) the introduction of radio repeaters and improved communications equipment, 5) increased smog in metropolitan areas, 6) higher costs in lookout maintenance and operation, and 7) fixed point automation with sophisticated electronic equipment, such as satellites and ground optics. Once over 600 lookout sites existed in California, but today that number has shrunk to less than 290. Approximately 107 of those sites are still in active use. Today, the future of fixed point detection is uncertain, as is the fate of the fire lookout.

BIBLIOGRAPHY

Secondary Sources

Pyne, Stephen J.
1983 Fire and Forest Management. In Richard C. Davis, ed., Encyclopedia of American Forest and Conservation History., vol. 1. NY: Macmillan Publishing Company. pp. 169-173.

Robbins, William G.
1985 American Forestry: A History of National, State, and Private Cooperation. University of Nebraska Press, Lincoln.

Steen, Harold K.
1977 The U.S. Forest Service: A History. 2nd ed. University of Washington Press, Seattle.

Thornton, Mark V.
1986 Fixed Point Fire Detection: The Lookouts. Ms. on file, U.S. Forest Service, Region 5, San Francisco.

Primary Sources

USDA Forest Service
Regional Fire Plans. On file, Federal Records Center, San Bruno, California.

USDA Forest Service
Fire Correspondence, History. On file, Eldorado National Forest archives. Supervisor's Office, Placerville, California.

LOOKOUT CLASSIFICATION

In determining the historical significance of fire lookouts one approach is to identify and compare individual types. Fire lookouts represent a distinct thematic group, but within this group, there is a wide array of architectural designs. Before delineating these specific design types, it is useful to segregate the various types into broad categories. Six categories have been created by defining the structure's intended use. In as much as a lookout operator is hired to do just that, namely, "lookout" for fire, then it is the relationship of the work place to the building as a whole that will determine the structure's function and, therefore, its assigned category.

The rangefinder (aka: firefinder), a mechanical devise used to pinpoint a fire on a map, is intrinsic to fire detection, and is the key element in determining the lookout operator's working location. By correlating this factor to the detection site's original fire plan designation (at the time the lookout was constructed), we gain further insight into a building's originally intended uses. The fire plan designations are:

> **Primary:** continuous seasonal use by lookout operator.
>
> **Secondary:** continuous seasonal use by the lookout firemen and/or use during moderate to high fire danger only.
>
> **Emergency:** use only during high fire danger by the lookout-firemen or prevention officer.
>
> **Project:** use for specific season(s) to watch regions of short term, high fire danger such as major land clearing operations, hydroelectric projects, highway building, etc.

While the fire plan designation may generally prove useful, a few words of caution are in order. Budget constraints, geography, climate, labor and material source, management policy, and public relations have all influenced the placement and design of fire lookouts. Therefore, one of the most reliable methods for categorizing lookouts is by the location of the rangefinder, with the exception of structures used for fire management that were originally constructed for some other purpose. These buildings can be grouped into six separate categories:

1. Observation Only. Rangefinder is located in a work area only; general rule-of-thumb is that a room's floor plan is under 144 square feet (Figures 1 and 2).

2. Live-in Observatory. Most of the lookout operator's activities are centralized in the same room as the rangefinder, e.g., kitchen/bedroom/work area; floor plan is 144 square feet or larger. Generally primary or secondary designation (Figure 3).

3. Secondary. The rangefinder is located in a building with restricted visibility due to the building's inherent design. Facility's location provides limited detection in areas blind to primary lookouts. Secondary, emergency, or project designation. (Note: Buildings designated as secondary lookouts that could just as easily provide 360 degree visibility at primary lookout sites should fit into one of the above categories) (Figure 5).

4. Dwellings. All lookout housing facilities that cannot accommodate a rangefinder by virtue of intrinsic design restrictions. (Note: Many secondary category buildings were used only as dwellings with observation towers erected nearby. However, if the building could have provided secondary service without modification, then it should be so listed) (Figure 6).

5. Portable. Includes all tents, trailers, and facilities that were designed for easy set-up and removal. Total population is small, therefore, the rangefinder's location is used to indicate specific generic types. Any designation (Figure 7).

6. Unclassified. Several lookouts were stationed atop structures that were constructed for another purpose. Grain elevators, water towers, and visitor centers are a few examples. Include all structures whose primary use is other than fire detection. Any designation.

The above categories group designs together by functions and facilitate quantification and referencing. The specific design types provide both the means, whereby historic significance evaluations may be performed, and an exact count of isolated structure types. But, before listing design types, a review of lookout architectural history is useful.

In general, most lookout structures reflect architectural styles which predate fire detection by many years. For example, cupolas have been built for hundreds of years. George Washington's Mount Vernon home illustrates a cupola incorporated into the design, similar to the cupola fire lookout towers borrowed from the oil and mining industrial architecture, and ranchs and farms. As such, it might be suggested that only live-in observatory (category 2) structures represent the "intrinsic" lookout design type. Fire lookouts were designed as basic, functional structures. The various types that exist today reflect the application of specific designs, as well as the introduction of building materials, and engineering design.

One of the first buildings erected in California was a locally designed cupola style building. Because of Coert DuBois' philosophy that all lookout activities should be centered around the firefinder, the cupola style lookout was rarely used in Region 5. Ironically, the Godwin firefinder, standard in Region 5, required an elevated platform 48" x 54", which made "observation only" towers cramped. Factors such as climate, cost, and convenience also detracted from adopting the cupola design to lookouts in Region 5.

The live-in observation cab gained popularity quickly throughout the nation. The first known prototypes of the standard 14' x 14', wood live-in cab were

built on the Lassen National Forest, but were smaller in size, measuring 10' x 10' x 8', and resting on concrete piers or rock foundations. Somewhat confining, these cabs were redesigned by Coert DuBois as 12' x 12' units, using standard dimensions and pre-cut materials. DuBois published his new design in a 1914 USDA Bulletin. The DuBois design came to be known as the "ready-cut" lookout because of its pre-fabricated design and use of materials of standard dimensions.

In 1917 DuBois enlarged the standard 12' x 12' cab to 14' x 14', still the standard today for lookout cab construction. With the 14' x 14' cab, the live-in observatory increased in use, in part due to DuBois who insisted that the lookout operator be kept in direct line-of-sight of the seen area at all times maximizing the potential to spot fires.

The following is a chronology of lookout development in Region 5:

1) High peaks with unobstructed view were the first sites chosen by the Forest Service for lookout points. Tents were occasionally used for shelter in addition to short map board stands (Figure 9).

2) Trees, crude observation only towers, platforms, and small log cabins began appearing after 1905 (Figure 1 and 10).

3) By 1911 cabins and cupolas were constructed on several mountain tops.

4) In 1914 Aermotor Company observation only towers with wood or metal 7' x 7' cabs were approved for use in Region 5.

5) In addition to the 12' x 12' wood live-in cab, in 1914 Region 5 also approved a wood, observation-only tower with a 7' x 7' wood cab.

6) In 1917 Coert duBois designed the standard 14' x 14' live in cab. Also presented was a secondary lookout building and a firemen's dwelling (Figure 11).

7) In 1921 a "ready-cut" lookout house with cupola was standardized for Region 6, but saw only limited use in California.

8) Around 1923 the duBois 14' x 14' cab was revised (mainly number of window panes and other minor changes).

9) During the 1920's bolts replaced nails as the preferred method of tower construction. Also, the nonbattered steel X-brace towers with 8' x 8' metal cabs were being erected in Los Angeles County.

10) Around 1927 a prototype K-brace, steel tower was introduced to support a 14' x 14' wood cab (Figure 12).

11) In 1929 a prototype of the H-brace, steel tower was erected (type L-201: Figure 13).

12) In 1930 the standard 20' H-brace tower was introduced (type L-401: Figure 14).

13) In 1931 the standard K-brace, steel tower was introduced (type L-801: Figure 15).

14) In the early 1930's the 14' x 14' cab was revised by Region 1 and presented to Region 5 in 1931.

15) Around 1933 two lookout-firemen dwellings were designed (types C1 and C1A). That same year the widely-used 19' x 30' standard woodframe lookout firemen dwelling (type BC-201) came out in 1933. It provided 270 degrees of visibility (Figure 16).

16) In 1934 Region 5 revised Region 1's 4-A ((Plan BC-301; 14' x 14' cab) revision to provide for mullions (metal rods) to extgend directly from the floor to the roof, thus reducing the potential for twisting of the cab or loss of the roof during high winds. It was recommended that this change be incorporated into older cabs (Figure 3).

17) In the early 1930's battered (Plan L-601) and nonbattered (Plan L-101) enclosed timber towers were standardized by Region 5 (Figures 17 and 18).

18) Around 1930, K-brace towers began using stairways with landings.

19) By 1938 Regions 4 and 6 had standardized plans for K-brace, steel towers up to 120' high and for timber towers that supported observation only cabs up to 119' and live-in observatories up to 117'.

20) Roughly between 1939 and 1944, 12' x 14' x 18' high standard woodframe houses with cupola and 12' x 14' standard woodframe houses, each with shingle siding, were erected for the Aircraft Warning Service Program (Figure 19).

21) In 1944-45, Region 5 built a steelframe cab with outward sloping windows similar in design to airport control towers (Plan BC-1001).

22) In 1947 the California Department of Forestry introduced an octangonal cab supported by a multi-composition tower consisting of a modified steel K-brace enclosed by a standard woodframe building (Plan 809R, CDF). Cab and tower were integrally designed (Figure 20).

23) In 1949 Region 5 dropped restrictions on K-brace tower heights.

24) In 1951 Region 5 adopted an all "ferrous sheet metal" live-in 13' x 13' cab with a flat roof designed by the Washington Office (Plan CL-104). About this time, Region 5 began constructing cinder-block towers (Figure 21).

25) In 1969, California Department of Forestry engineer, Mike Plesha, introduced a standard woodframe cab with a configuration similar to Region 5's (Plan BC-1001) (Figure 22).

26) In 1974 Region 5 architect, Robert Sandusky, designed a hexagonal wood frame cab (Figure 23).

27) In the early 1980's the California Department of Forestry began erecting General Services Administration surplus steel atomic test towers (Figure 24).

A commonly built lookout tower design was the timber tower. Its use began as early as 1914 and the design may have borrowed similar designs used for years by the oil industry. The bottom sections of observation-only towers exceeding 50' are of the same general design as the top sections of towers which support live-in cabs. Similarly, the few steel X-brace towers which supported live-in cabs drew their inspiration from the bottom sections of the familiar Aermotor Tower design exceeding 50' in heigth. In all cases, it is the battered tower design (inward leaning wall) with an open frame that is discussed in this report.

In this report, "timber tower" is used to describe wood towers whose corner posts consist of 6" x 6" or larger timbers, while framing timbers were milled in 8" x 8" or 10" x 10" widths and from 10' to 20' in length. Generally the wood was treated with creosote and then painted after assembly. Towers using peeled logs are referred to as "round timber towers".

As mentioned earlier, many lookout designs were standardized in the 1930's. In part, credit for this should go to Regional Forester, S.B. Show and his staff including Kotok and Barrett. As head of the Pacific Southwest Forest and Range Experiment Station, Kotok took the lead in the 1930 fire detection study. The main purpose of the study was to examine the role of fire detection in California and to develop scientific methods for fire prevention.

In 1931 work camps were established in California under the State Employment Relief Administration. Foremost was the creation of the Civilian Conservation Corps (CCC). Regional Forester, Show played a major role in the development of this joint Army-Forest conservation work camp program. Region 5 immediately took advantage of the new, civilian work force and initiated a massive program of construction projects throughout the state, including 250 lookout towers built between 1933 and 1942.

Even before the creation of the CCC, the Forest Service in Region 5 had devised plans for the placement of new lookouts and the rennovation of many older lookouts. By standardizing plans and preselecting sites, the Forest Service could order and have shipped, all necessary materials cheaply and efficiently to the staging grounds before moving the materials to the construction site. Materials and detection sites were coordinated through the Regional Office.

Establishing Types

Specific lookout types could be isolated by a four step process. First, a type could be created and named after the original designer or, if the designer had assigned a plan number, then the lookout type would be labeled with that number. If the identity of the designer was in doubt or unknown, then the second step was to establish an association with a single manufacturer, e.g., to locate the earliest assigned Regioinal Office plan numbers, e.g., Region 5's BC and L series plans.

A common problem with the planning number designations is the propensity for different agencies to have assigned their own numbers to the same plan. Another difficulty is that the same standardized plan, might have been built with minor variations. If the earliest or most commonly used plan number could not be assigned with confidence, then the fourth (and final) step was taken and a generic label created to describe the standardized type, e.g., battered, enclosed, timber towers comprise one type. When designs are clearly revised but not renumbered, then the original number is retained and an "R" sufficed, e.g., the circa 1923 revision of 4A becomes 4AR.

In other cases, the difficulty in describing specific traits of a design precluded isolating out each individual type. This also resulted in the creation of a generic label, e.g., trees comprise one type. Finally, if generic labels appeared to be too cumbersome, or pointless, the design is simply left untyped and is so listed under the general category heading. The steel monopod tower on Lems Ridge is an illustration-in-point.

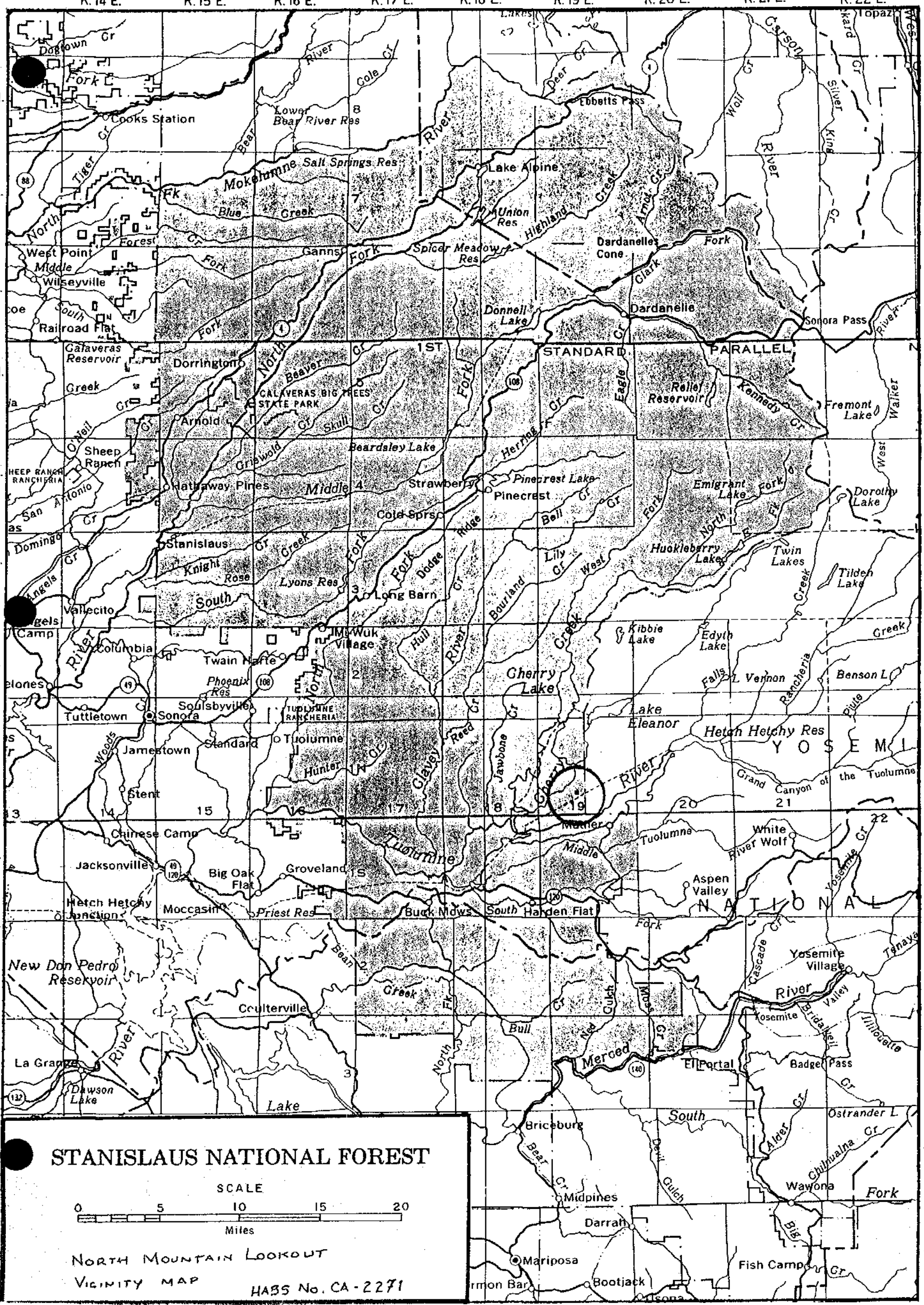
Indeed, lookout towers are similar to snowflakes in that no two are exactly alike. Hopefully, a workable compromise has been struck between being too general and too pedantic. Every attempt has been made to develop generic labels which incorporated terms traditionally associated with a particular design.

Cabs have been individually typed, reflecting the fact that they were routinely designed apart from the towers which support them. The cumulative result of this procedure has been the assignment of types ranging from highly popular, standardized structures to rather obscure experimental designs. This ensures recognition of prototypes and rare designs, in addition to the standards.

In summary, this typology was developed to isolate both specific and generic designs for inventory purposes and to aid in the evaluation of a lookout's historical significance. If a structure is a sole survivor, its significance may be somewhat qualified by comparing it to other types within the same category (its relation to the lookout population on the whole is also useful).

Although this research has been confined to Region 5 (California), some information from other parts of the country was accessed to ensure greater applicability and historical authenticity. A few designs from outside California have been included in the final classification scheme. Mention should also be made of the 1938, U.S. Forest Service publication "Standard

Lookout Structure Plans". This booklet, a distillation of the many regionally drafted lookout plans, presents under one cover the most widely used and approved designs. It was intended to aid fire management in both the selection of structure type and in construction contract bids. Its influence in Region 5 was minimal by virtue of the fact that most lookout construction had already been accomplished by 1938. These types have been included in this report and referenced as "U.S. Forest Service".


STANISLAUS NATIONAL FOREST
SCALE
0 5 10 15 20
Miles
North Mountain Lookout
Vicinity Map
HABS No. CA-2271
R. 14 E.
R. 15 E.
R. 16 E.
R. 17 E.
R. 18 E.
R. 19 E.
R. 20 E.
R. 21 E.
R. 22 E.
T. 8 N.
T. 7 N.
T. 6 N.
T. 5 N.
T. 4 N.
T. 3 N.
T. 2 N.
T. 1 N.
T. 1 S.
T. 2 S.
T. 3 S.
T. 4 S.
T. 5 S.
1ST STANDARD PARALLEL
Cooks Station
Lower Bear River Res
Ebbetts Pass
Lake Alpine
Union Res
Salt Springs Res
Mokelumne
West Point
Wilseyville
Railroad Flat
Ganns
Spicer Meadow Res
Dardanelles Cone
Dardanelle
Sonora Pass
Donnell Lake
Calaveras Reservoir
Dorrington
CALAVERAS BIG TREES STATE PARK
Arnold
Relief Reservoir
Fremont Lake
Sheep Ranch
Hathaway Pines
Beardsley Lake
Strawberry
Pinecrest
Pinecrest Lake
Cold Sprs
Emigrant Lake
Dorothy Lake
Stanislaus
Huckleberry Lake
Twin Lakes
Tilden Lake
Lyons Res
Long Barn
Vallecito
Angels Camp
Columbia
Mi-Wuk Village
Kibbie Lake
Edyth Lake
Twain Harte
Phoenix Res
Cherry Lake
L. Vernon
Benson L.
Tuttletown
Sonora
Soulsbyville
TUOLUMNE RANCHERIA
Lake Eleanor
Hetch Hetchy Res
Jamestown
Standard
Tuolumne
YOSEMITE NATIONAL
Grand Canyon of the Tuolumne
Stent
Chinese Camp
Mather
White Wolf
Jacksonville
Big Oak Flat
Groveland
Aspen Valley
Hetch Hetchy Junction
Moccasin
Priest Res
Buck Mdws
Harden Flat
New Don Pedro Reservoir
Yosemite Village
Coulterville
Merced
El Portal
Badger Pass
La Grange
Dawson Lake
Briceburg
Ostrander L.
Midpines
Wawona
Darrah
Mariposa
Bootjack
Fish Camp

HABS
CAL,
55-GROLA.V,
2-

USDA - Forest Service

Permanent Trinomial: Supplement___

ARCHAEOLOGICAL SITE RECORD Other Designations: FS 05-16-54-974

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1. County: Tuolumne

2. USGS Quad: Lake Eleanor, NW 7.5'[X] 15'[ ] Year 1956 (Photorevised)

3. UTM Coordinates: Zone 11 245340m Easting 4198760m Northing

4. Township 1N Range 19E SE 1/4 of NE 1/4 of NW 1/4 of Sec. 33 Base Mer. M.D.

5. Map Coordinates: x mmS x mmN (from NW map corner) 6. Elevation 5754'

7. Location: From Highway 120, turn onto the Cherry Oil Road (1S02). Drive to Hetch Hetchy dam. Cross the mainstem of the Tuolumne River at O'Shaughnessy Dam and proceed to Miguel Meadow. (The National Park Service requires that visitor's park their vehicle at the dam site, and proceed on-foot from there.) After approximately 5 miles, walk southwest onto 1S99. 1S99 terminates at North Mountain lookout.

Alternately, from Highway 120, turn onto 1S02 . Turn northeast onto 1N07. Drive approximately 7 miles, and turn east onto 1N45. Drive to the locked gate near the end of 1N45. A trailhead to North Mountain is at the gate location, on the south side of the Road 1N45.

8. Prehistoric [ ] Historic [X] Protohistoric [ ]

9. Site Description: North Mountain Lookout tower, garage and privy complex was built in 1963. The lookout tower is a 54'-tall, K-brace with a 13' x 13' live-in cab. The construction is completely of steel. The garage is a 24 1/2' x 20' 4" wood frame, wood sheathed, cement foundation garage with storage area. The privy is a wood framed, wood sheathed, cement foundation, one-seater chemical toilet. The site also encompasses the foundation remnants of the original lookout tower at North Mountain which was removed by the USFS after the present tower was erected.

10. Area: 80m (NW/SE) x 40m (SW/NE) = 2513m
Method of Determination: Paced

11. Depth: NA cm. Method of Determination: NA

12. Features: Lookout tower with live-in cab, garage and storage building, privy, dirt access road and cement perimeter foundation (reinforced with rebar) of the former lookout.

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The tower legs are attached to cement piers. The northeast pier is inscribed with the date "1963." There is also a propane tank just southeast of the southeast corner of the tower. The tank was built in 1965. There is another L.P. tank under the northwest quadrant of the tower that was built in 1963.

13. Artifacts: Artifacts that appear to be associated with the former lookout at North Mountain include ~25 pieces of vitrified china with recognizable pieces of plates and cups; ~6 unvitrified, white insulators & wire nails. There are also about 20 rusted tin cans; all modern variety.

There is a wooden sign about 25m northwest of the tower that reads: STANISLAUS NATIONAL FOREST NORTH MOUNTAIN LOOKOUT ELEVATION 5754

~50m west of the standing lookout is a small flat on which is a rock fire ring and a small scatter of lumber. The lumber appears to have been ornamental fascia, since it is sawn in a serrated fashion.

14. Non-Artifactual Constituents and Faunal Remains: None observed

15. Date Recorded: May 25, 1988 16. Recorded By: Pamela A. Conners

17. Affiliation and address: Forest Historian
Stanislaus National Forest
19777 Greenley Road
Sonora, CA 95370

18. Human Remains: None observed

19. Site Disturbances: Minor vandalism of the garage. High cut, burned stumps in the area indicate that the area had burned. The charred stumps may be from the 1908 fire that started in Yosemite and spread into the North Mountain area.

20. Nearest Water (Type, distance and direction): North Mountain Lookout is on the ridge that separates Cherry Creek and the mainstem of the Tuolumne River.

21. Vegetation Community (site vicinity): Yellow pine belt
(Plant List [ ])

22. Vegetation (on site): Yellow pine, sugar pine, black oak, incense cedar, scrub oak, bear clover, brodea, rabbit brush, deer brush, manzanita, mountain violets.

23. Site soil: disintegrated granite

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24. Surrounding soil: not noted

25. Geology: Mesozoic granite

26. Landform: Prominent mountain top

27. Slope: 0-2°

29. Landowner(s) and Address: Stanislaus National Forest
(see item 17, above)

30. Remarks: North Mountain tower and cab are slated to be removed to replace the lookout at Smith Peak which burned in the 1987 Stanislaus Complex Fire. North Mountain was determined to be eligible for the National Register of Historic Places in conslultatin with the State Historic Preservation Office in the context of the R-5 Lookout Study. Moving and truncating it would result in changing the qualities that make it eligible. Therefore, it is being recorded to Historic American Buildings Survey standards.

See HABS documentation for further historical and architectural information.

31. References:

USFS, Region 5, Programmatic Agreement for Fire Lookout Facilities, draft August 1987 (based on Mark V. Thornton's, Fixed-Point Fire Detection in the USDA Forest Service, Region 5). MS on file at Stanislaus National Forest, Supervisor's Office

Personal communication between Juanita Larson, former lookout at North Mountain, and Pamela Conners, Forest Historian, April 6, 1988.

Personal communication between Dale Moore, contractor for erecting North Mountain Lookout, and Pamela Conners, Forest Historian, March 31, 1988.

R-5 architectural drawing archive, via Robert Sandusky, Regional Architect.

Stanislaus Fire Protection Plan, District 2, 1911. (MS on file in StF History File, 5100/5110)

Modesto Bee, Modesto, CA, October 13, 1963, "New Lookout Tower Points Up Strides in Forest Fire Detection and Control."

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31 References, continued

Storer, Tracy I., Usinger, Robert L., Sierra Nevada Natural History, 1963, Berkeley: UC Press.

32. Name of Project: North Mountain resource compartment
Removal of North Mountain Lookout to Smith Peak

33. Type of Investigation: Inventory and documentation to HABS standards.

34. Site Accession Number: nothing collected Curated at: NA

35. Photos: Roll 88-1PC, 24 B&W photos. Also, professional photographs taken for HABS documentation.

36. Capability Area: 776

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

ARCHEOLOGICAL SITE MAP

Permanent Trinomial: _____ 05 | 88 (Mo. Yr.)

Other Designations: 05-16-54-974

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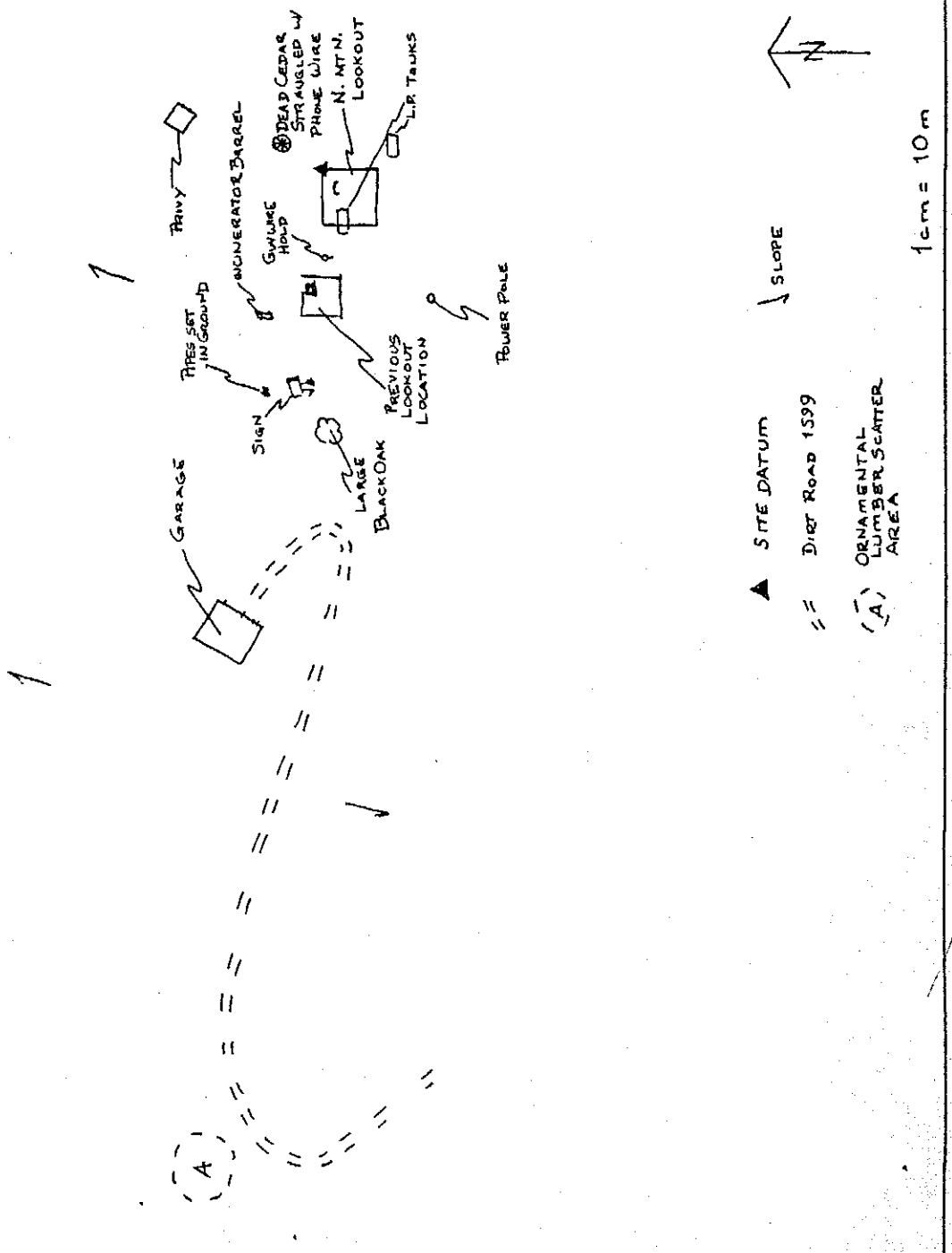

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

FEATURE RECORD

Permanent Trinomial: _____ 05 (Mo.) 88 (Yr.)

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Type of Feature: NORTH MOUNTAIN FIRE LOOKOUT / CAB INTERIOR